

Work Order ID 159933

Wednesday, April 19, 2017 3:13:16 PM

159933

Ship Alone

Page 1

Item ID: D3391-023 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Mid Tube Assembly
 Start Date: 4/24/2017 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 5/3/2017 Req'd Qty: 1.00 ***1*** Customer:
 Reference: SCHEDULED/S

Approvals: Process Plan: DAS Date: APR 20 2017 Tooling: Date: Run Start ***NR1***
 QC: 9-03 Date: SPC (Y/N): Date: Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D3391	J

100 Skidtubes 0.00
100
 Skidtubes
 Skidtubes
 Memo 1.24
 1-Cut tube to finish length as per Dwg D3391
 2-Drill pilot holes using DT8796 (Do not drill "B" holes) and drill only 1 fwd saddle hole on one side only as per Dwg D3391
 3-Open aft saddles and GHW holes to Ø0.4375" except for fwd saddle holes
 4-Remove .030" from Fwd indexing Ridge as per Dwg D3391
 5-Remove indexing ridge on Fwd & Aft end of skidtube as per Dwg D3391
 6-Deburr, scribe batch # on aft end.
 7-Locate D3391-021 in D3391-023 at 9.00" (see view F-F)
 8- Transfer drill one fwd saddle hole only to .188" dia, transfer drill all remaining fwd saddle holes using DT 8149 locating from previously drill .188" dia hole, using t-pins and clicos to ensure perfect alignment, open up previously tranfer drilled pilot holes in D3391-023/-021 using drill press.
 ON FIRST SIDE ONLY drill out 2nd and forth fwd saddles holes to 0.500" as per
 ON 2ND SIDE ONLY ream out 2nd and forth saddle hole to 0.499".
 D3391-021 BATCH: _____

DAS 03 9-03

DAS 03 9-03

NIA

17 06 19
P.T.O.

17 05 08
DT

B159933

9- Drill #30 pilot holes using wearplate Jig DT8217 Identify Ø0.375" holes with

Open Fwd Saddle holes pending.

17 06 19
DT

DQA:

Date: 2017-07-10

QA Closed:

Date: JUN 29 2017

WORK ORDER NON-CONFORMANCE / UPDATE

DART.
AEROSPACEWork Order update only ☐

Work Order:

159933

Part No.

D3391-023

NCR No.

17-6477

DISPOSITION

Rework ☐
 Scrap ☒
 Use-as-is ☐
 Suspected Unapproved ☐

AGAINST DEPARTMENT/PROCESS

Skid-tube ☒
 Machining ☐
 Thermoforming ☐
 Large Fab ☐
 Cross tube ☐
 Small Fab ☐
 Finishing ☐
 Composite ☐
 Water Jet ☐
 Prod. Eng. Coord. ☐
 Rec/Store/Packaging Supplier ☐
 Engineering ☐
 Quality ☐
 Other ☐

Date:

17-05-08

Step #:

100

QTY Effective:

MRB (QSI042) Approval

Description Work Order Deviation

Disposition

Ridge was remove on wrong side of
 skid (seq. 100 step 4)

Scrap destroy and replace.

LC. operator LOA

B133815

17-05-08
 PD 17-08

Completed By

17-05-08

Lead hand / Supervisor
 Approval Verification

17-05-08

QC / QA Coordinator
 Approval

PD 17-05-08

Root Cause

FAULT CATEGORY

Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☒
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐
LOA ☒	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐
Past Expiry Date ☐	Manufacturing Process ☐				
Misidentified ☐	Past Due ☐				

OTHER:

Work Order ID 159933***159933***

Page 2

Wednesday, April 19, 2017 3:13:16 PM

Item ID: D3391-023 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Mid Tube Assembly
Start Date: 4/24/2017 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 5/3/2017 Req'd Qty: 1.00 ***1*** Customer:
Reference: SCHEDULED/S

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***
Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
	paint marker, ***DO NOT DRILL HOLES #3-19-20 FROM FWD END OF JIG*** Locating from two fwd wearplate holes in D3391-023 drill remaining 6 wearplate holes in D3391-021 using DT8937								
	10- Open wearplate holes of D3391-023 assembly detail section G-G to Ø0.375" (10 holes) as per Dwg D3391 Open wearplate holes of D3391-023 assembly detail section H-H to Ø0.297" (20 holes) as per Dwg D3391 Deburr and blow out all chips from inside tube, scribe batch # in D3391-023 at aft end.								
	11- Open 10 wearplate holes in D3391-021 to 0.297" dia.								
	12- DEBURR AND BLOW OUT CHIPS								

110

QC5- Inspect part completeness to step on W/O 0.00

110

QC

Memo

0.02

Quality Control

DAG
38
9-89

JUN 15 2017

DQA: _____ Date: _____

QA Closed: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

DART
AEROSPACE

Work Order update only ☐

Work Order: _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS																			
Part No. _____				Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐		Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐		Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging Supplier ☐		Engineering ☐ Quality ☐ Other ☐													
NCR No. _____																							
Date: _____		Step #: _____		QTY Effective: _____																			
Description Work Order Deviation				Disposition				MRB (QSI042) Approval															
								Completed By															
								Lead hand / Supervisor Approval Verification															
								QC / QA Coordinator Approval															
Root Cause				FAULT CATEGORY																			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐				No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐				Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐				Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐				Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐				Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
				OTHER: _____																			

Work Order ID 159933***159933***

Page 3

Wednesday, April 19, 2017 3:13:16 PM

Item ID: D3391-023

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Mid Tube Assembly

Start Date: 4/24/2017 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/3/2017 Req'd Qty: 1.00

1

Customer:

Reference: SCHEDULED/S

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start

NR1

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	Chemical Conversion Coat per OSI005 4.1	0.00							
120									
HandFinish	Memo	0.26							
Hand Finishing									
130	QC7-Inspect Chemical Conversion Coat	0.00							
130									
QC	Memo	0.02							
Quality Control									

120 of 120 4/19/17

DAS
37
9-89

17-06-15

DQA: _____ Date: _____

QA Closed: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



Work Order update only ☐

Work Order: _____

Part No. _____

NCR No. _____

DISPOSITION

Rework ☐
Scrap ☐
Use-as-is ☐
Suspected Unapproved ☐

AGAINST DEPARTMENT/PROCESS

Skid-tube ☐
Machining ☐
Thermoforming ☐
Large Fab ☐
Cross tube ☐
Small Fab ☐
Finishing ☐
Composite ☐
Water Jet ☐
Prod. Eng. Coord. ☐
Rec/Store/Packaging ☐
Supplier ☐
Engineering ☐
Quality ☐
Other ☐

Date: _____

Step #: _____

QTY Effective: _____

Description Work Order Deviation

Disposition

MRB (QS1042) Approval

Completed By

Lead hand / Supervisor
Approval Verification

QC / QA Coordinator
Approval

Root Cause

Environment ☐
Design ☐
Doc/Data ☐
Equip/Tooling ☐
Handling/Pre ☐
Material ☐
Internal Transport ☐
Tribal Knowledge ☐
LOA ☐
Substation ☐
Past Expiry Date ☐
Misidentified ☐
No Re-verification ☐
Operator ☐
Offset/Setup ☐
Supplier ☐
Training ☐
Use for Testing ☐
Poor Information ☐
Rushing ☐
Product Improvement ☐
Process Improvement ☐
Manufacturing Process ☐
Past Due ☐

Pressure/Forced ☐
Bending ☐
Centre Not Concentric ☐
Cracks ☐
Crimp/Kink/Ripple/Wave ☐
Cuffs ☐
Crushing ☐
Heat Treat ☐
Wave/Twist in Tube ☐
Marks/Chatter ☐

FAULT CATEGORY

Temperature/Cure ☐
Set-up ☐
BOM/Route ☐
Broken/Damage/Defect ☐
Inspection Incomplete/Unqualified ☐
Contamination ☐
Countersink ☐
Cut Too Short ☐
Instructions Incomplete/Unclear ☐
Drill Holes ☐
Power Loss/Surge ☐
Folio/Program ☐
Grain ☐
Weld ☐
Wrong Stock Pulled ☐
Out of Sequence ☐
Off-set ☐
Misabeled ☐
Fit/Function ☐
Misaligned/off center ☐
Positioned Wrong ☐
Outside Dimensions ☐
Over/Under tolerance ☐
Part Incorrect ☐
Part Lost/Missing ☐
Part Moved ☐
Drawing ☐
Finish ☐
Misread ☐
Turning Sequence ☐

OTHER: _____

159933

Wednesday, April 19, 2017 3:13:16 PM

N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 4/24/2017 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 5/3/2017 Req'd Qty: 1.00 *1*

Customer:

Reference: SCHEDULED/S

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Stop *NR2*

Operation Description

Set Up/ Run Hours

Tool ID**Tool #****Plan
Code**

**Accept
Qty**

Reject
QtyReject
Number

**Insp.
Stamp**

140

0.00

140

Skidtubes

0.53

Skidtubes

Skidtubes

Memo

- 1-Open float bag holes as per dwg
- 2-C'sink float bag holes as per dwg
- 3- Prepare tube for welding
- 4-Bond web in place as per Dwg D3391 & QSI 015.

Adhere for 12 hours)

A/R Sikaflex exp:

batch#: 137526

NOTE:ENSURE WEB IS INSERTED IN AFT END OF TUBE

0.00

150

150

0.02

QC

Quality Control

DQA: _____ Date: _____

QA Closed: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

DART
AEROSPACE

Work Order update only ☐

Work Order: _____

Part No. _____

NCR No. _____

DISPOSITION

Rework ☐
Scrap ☐
Use-as-is ☐
Suspected Unapproved ☐

AGAINST DEPARTMENT/PROCESS

Skid-tube ☐
Machining ☐
Thermoforming ☐
Large Fab ☐
Cross tube ☐
Small Fab ☐
Finishing ☐
Composite ☐
Water Jet ☐
Prod. Eng. Coord. ☐
Rec/Store/Packaging ☐
Supplier ☐
Engineering ☐
Quality ☐
Other ☐

Date: _____

Step #: _____

QTY Effective: _____

Description Work Order Deviation

Disposition

MRB (QS1042) Approval

Completed By

Lead hand / Supervisor
Approval Verification

QC / QA Coordinator
Approval

Root Cause

Environment ☐
Design ☐
Doc/Data ☐
Equip/Tooling ☐
Handling/Pre ☐
Material ☐
Internal Transport ☐
Tribal Knowledge ☐
LOA ☐
Substation ☐
Past Expiry Date ☐
Misidentified ☐
No Re-verification ☐
Operator ☐
Offset/Setup ☐
Supplier ☐
Training ☐
Use for Testing ☐
Poor Information ☐
Rushing ☐
Product Improvement ☐
Process Improvement ☐
Manufacturing Process ☐
Past Due ☐

Pressure/Forced ☐
Bending ☐
Centre Not Concentric ☐
Cracks ☐
Crimp/Kink/Ripple/Wave ☐
Cuffs ☐
Crushing ☐
Heat Treat ☐
Wave/Twist in Tube ☐
Marks/Chatter ☐

FAULT CATEGORY

Temperature/Cure ☐
Set-up ☐
BOM/Route ☐
Broken/Damage/Defect ☐
Inspection Incomplete/Unqualified ☐
Contamination ☐
Countersink ☐
Cut Too Short ☐
Instructions Incomplete/Unclear ☐
Drill Holes ☐
Power Loss/Surge ☐
Folio/Program ☐
Grain ☐
Weld ☐
Wrong Stock Pulled ☐
Out of Sequence ☐
Off-set ☐
Misabeled ☐
Fit/Function ☐
Misaligned/off center ☐
Positioned Wrong ☐
Outside Dimensions ☐
Over/Under tolerance ☐
Part Incorrect ☐
Part Lost/Missing ☐
Part Moved ☐
Drawing ☐
Finish ☐
Misread ☐
Turning Sequence ☐

OTHER: _____

159933

Wednesday, April 19, 2017 3:13:16 PM

N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 4/24/2017 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 5/3/2017 Req'd Qty: 1.00 *1*

Customer:

Reference: SCHEDULED/S

Approvals: **Process Plan:** **Date:** **Tooling:** **Date:**

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

**Insp.
Stamp**

160

0.00

160

Skidtubes

0.60

Skidtubes

Memo

Skidtubes

1-Weld crossbolt spacer as per dwg D3391 & QSI 004
2-grind weld flush

A/R M136920 8E17-06-16

170

QC10- Inspect visual per QSI004- ground welds

0.00

170

QC

Memo

0.02

Quality Control

DAS
38
9-89

JUN 16 2017

180

QC5- Inspect part completeness to step on W/O

0.00

180

OC

Memo

0.02

Quality Control

DAS
38
9-89

JUN 16 2017

DQA: _____ Date: _____

QA Closed: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



Work Order update only ☐

Work Order: _____

Part No. _____

NCR No. _____

DISPOSITION

Rework ☐
Scrap ☐
Use-as-is ☐
Suspected Unapproved ☐

AGAINST DEPARTMENT/PROCESS

Skid-tube ☐
Machining ☐
Thermoforming ☐
Large Fab ☐
Cross tube ☐
Small Fab ☐
Finishing ☐
Composite ☐
Water Jet ☐
Prod. Eng. Coord. ☐
Rec/Store/Packaging ☐
Supplier ☐
Engineering ☐
Quality ☐
Other ☐

Date : _____

Step #: _____

QTY Effective : _____

Description Work Order Deviation

Disposition

MRB (QS1042) Approval

Completed By

Lead hand / Supervisor
Approval Verification

QC / QA Coordinator
Approval

Root Cause

Environment ☐
Design ☐
Doc/Data ☐
Equip/Tooling ☐
Handling/Pre ☐
Material ☐
Internal Transport ☐
Tribal Knowledge ☐
LOA ☐
Substation ☐
Past Expiry Date ☐
Misidentified ☐
No Re-verification ☐
Operator ☐
Offset/Setup ☐
Supplier ☐
Training ☐
Use for Testing ☐
Poor Information ☐
Rushing ☐
Product Improvement ☐
Process Improvement ☐
Manufacturing Process ☐
Past Due ☐

Pressure/Forced ☐
Bending ☐
Centre Not Concentric ☐
Cracks ☐
Crimp/Kink/Ripple/Wave ☐
Cuffs ☐
Crushing ☐
Heat Treat ☐
Wave/Twist in Tube ☐
Marks/Chatter ☐

FAULT CATEGORY

Temperature/Cure ☐
Set-up ☐
BOM/Route ☐
Broken/Damage/Defect ☐
Inspection Incomplete/Unqualified ☐
Contamination ☐
Countersink ☐
Cut Too Short ☐
Instructions Incomplete/Unclear ☐
Drill Holes ☐
Power Loss/Surge ☐
Folio/Program ☐
Grain ☐
Weld ☐
Wrong Stock Pulled ☐
Out of Sequence ☐
Off-set ☐
Misabeled ☐
Fit/Function ☐
Misaligned/off center ☐
Positioned Wrong ☐
Outside Dimensions ☐
Over/Under tolerance ☐
Part Incorrect ☐
Part Lost/Missing ☐
Part Moved ☐
Drawing ☐
Finish ☐
Misread ☐
Turning Sequence ☐

OTHER : _____

Work Order ID 159933

Wednesday, April 19, 2017 3:13:16 PM

159933

Page 6

Item ID: D3391-023 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Mid Tube Assembly
 Start Date: 4/24/2017 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 5/3/2017 Req'd Qty: 1.00 ***1*** Customer:
 Reference: SCHEDULED/S

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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185	Pressure Wash per QSI005 4.3	0.00							
185									
HandFinish	Memo	0.40							
Hand Finishing	AND REALODINE AS PER PAR09-043								

2017/06/19
BEB.

190		0.00							
190									
SprayPaint	Memo	2.00							
Spray Painting	PRIME AS PER DWG AND QSI005 4.2.1.3.3 PRIMER BATCH: _____								

190 outsource → P/O: 36744 JUN 19 2017

200	QC - Inspect Spray Paint	0.00							
200									
QC	Memo	0.02							
Quality Control									

195 - Packery Review & Inspect

DAS
13
9-89

DAS
38
9-89

JUN 20 2017

DAS
9
9-89

17.06.20

DQA: _____ Date: _____

QA Closed: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐				
Date: _____		Step #: _____		QTY Effective: _____			MRB (QS1042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Description Work Order Deviation				Disposition				

Root Cause				FAULT CATEGORY			
Environment ☐	Design ☐	Doc/Data ☐	Equip/Tooling ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐
Handling/Pre ☐	Material ☐	Internal Transport ☐	Tribal Knowledge ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐
LOA ☐	Substation ☐	Past Expiry Date ☐	Misidentified ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐
				Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐
				Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐
				Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐
				Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐
				Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐
				Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐
				Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐
OTHER : _____							

159933

Wednesday, April 19, 2017 3:13:16 PM

N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 4/24/2017 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 5/3/2017 **Req'd Qty:** 1.00 ***1***

Customer:

Reference: SCHEDULED/S

Run Start *NR1*

Approvals: _____ **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop ***NR2***

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

230

230

HandFinish

Hand Finishing

HandFinishing

Memo

1-Install Inserts as per Dwg

0.00

0.60

Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp

12 / 20 17 / 20

240

QC

Quality Control

QC5- Inspect part completeness to step on W/O	0.00
---	------

Memo

0.00

0.02

1

DAS
38
80

JUN 20 2017

250

Packaging

Packaging

Identify as per dwg & Stock Location: 0.00

Memo

0.00

0.30

DAS
27
9-85

JUN 20 2017

DQA: _____ Date: _____

QA Closed: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



Work Order update only ☐

Work Order: _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS							
Part No. _____				Skid-tube ☐	Machining ☐	Cross tube ☐	Water Jet ☐	Engineering ☐			
NCR No. _____				Thermoforming ☐	Small Fab ☐	Finishing ☐	Prod. Eng. Coord. ☐	Quality ☐			
Date: _____		Step #: _____		QTY Effective: _____		Rec/Store/Packaging Supplier ☐		Other ☐			
Description Work Order Deviation				Disposition				MRB (QSI042) Approval			
								Completed By			
								Lead hand / Supervisor Approval Verification			
								QC / QA Coordinator Approval			
Root Cause				FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐						
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐						
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐						
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐						
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐						
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐						
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐						
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐						
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐						
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐						
Past Expiry Date ☐	Manufacturing Process ☐										
Misidentified ☐	Past Due ☐										
OTHER: _____											

Work Order ID 159933***159933***

Page 8

Wednesday, April 19, 2017 3:13:16 PM

Item ID: D3391-023 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Mid Tube Assembly
Start Date: 4/24/2017 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 5/3/2017 Req'd Qty: 1.00 ***1*** Customer:
Reference: SCHEDULED/S

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
260	QC21- Final Inspection - Work Order Release	0.00							
260									
QC	Memo	0.01							
Quality Control									

17/6/20

 JUN 20 2017

DQA: _____ Date: _____

QA Closed: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date: _____		Step #: _____		QTY Effective: _____				MRB (QS1042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Description Work Order Deviation				Disposition					
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER: _____							
Misidentified ☐	Past Due ☐								

Picklist Print

Wednesday, April 19, 2017 3:13:16 PM

Page 1

Work Order ID: 159933

159933

Parent Item: D3391-023

D3391-023

Parent Item Name: Mid Tube Assembly

Start Date: 4/24/2017

Required Date: 5/3/2017

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP A05.10.20New Issue KJ/EC
 IPP B06.02.10ECN773 dwg rev.D EC
 IPP C 07.03.20 rev F dwg EC
 IPP D 07.03.28 re-format EC
 IPP E 07.10.31 ecn 1053P EC
 IPP Rev:F ECN 1056 07-11-13 DD verified by: EC
 IPP Rev:G 08-09-08 new process (ecn 08-510) DD verified by:EC
 IPP Rev:H 08-09-10 revH as per dwg DD verified by:EC
 IPP Rev: I 08-11-13 Removed steps per w/o, QC KJ verified by: ec IPP
 Rev:J add in seq 140 expire date &b# sikaflex DD 10.02.17 verified by:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D2500-1-100

Manufactured

No

100

Each

27.0000

1

1

D2500-1-100

Skidtube Extrusion

**

17-05-08
D7-

Location

Loc Qty

Loc Code

HALL

27

133815

27

D3591-1

Manufactured

No

230

Each

37.0000

2

2

D3591-1

Bushing

**

B1S8739

Location

Loc Qty

Loc Code

FG

10

115645

4

92873

6

FP001

27

109107

2

134643

9

141636

6

149167

3

153743

3

157205

1

157646

3

DAS
27
9-89

DAS
28
9-89

JUN 20 2017

DQA: _____ Date: _____

QA Closed: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width: 100%;"> <tr> <td style="width: 15%;">Skid-tube</td> <td style="width: 15%;">Cross tube</td> <td style="width: 15%;">Water Jet</td> <td style="width: 15%;">Engineering</td> </tr> <tr> <td>Machining</td> <td>Small Fab</td> <td>Prod. Eng. Coord.</td> <td>Quality</td> </tr> <tr> <td>Thermoforming</td> <td>Finishing</td> <td>Rec/Store/Packaging</td> <td>Other</td> </tr> <tr> <td>Large Fab</td> <td>Composite</td> <td>Supplier</td> <td></td> </tr> </table>						Skid-tube	Cross tube	Water Jet	Engineering	Machining	Small Fab	Prod. Eng. Coord.	Quality	Thermoforming	Finishing	Rec/Store/Packaging	Other	Large Fab	Composite	Supplier	
Skid-tube	Cross tube	Water Jet	Engineering																						
Machining	Small Fab	Prod. Eng. Coord.	Quality																						
Thermoforming	Finishing	Rec/Store/Packaging	Other																						
Large Fab	Composite	Supplier																							
Date: _____		Step #: _____		QTY Effective: _____			MRB (QS1042) Approval																		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																	
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OTHER: ☐																									

Picklist Print

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Page 2

Work Order ID: 159933

159933

Parent Item: D3391-023

D3391-023

Parent Item Name: Mid Tube Assembly

Start Date: 4/24/2017

Required Date: 5/3/2017

Start Qty: 1.00

Required Qty: 1.00

D3389-1 Manufactured No

140 Each 7.0000 1 1

D3389-1

Web

**

Mon 4/24/17

Location

Loc Qty

Loc Code

LG002

161695

7

154065

2

158256

5

D3681-1 Manufactured No

160 Each 112.0000 5 5

D3681-1

Spacer

**

*BE/706-16
8/60402 x 5*

Location

Loc Qty

Loc Code

LG001

112

145956

1

151967

4

155381

1

155806

8

158384

98

ALS4-1032-130 AELS4-1032-130 Purchased No

230 Each 4,643.000 20 20

ALS4-1032-130

Rivnut

**

17/06/17

Location

Loc Qty

Loc Code

CCK007

2764

M136579

2764

FG

50

FG

M135442

50

FP001

1258

M133077

3

M135442

3

M136579

1252

st555

571

M136579

571

X20

DQA: _____ Date: _____

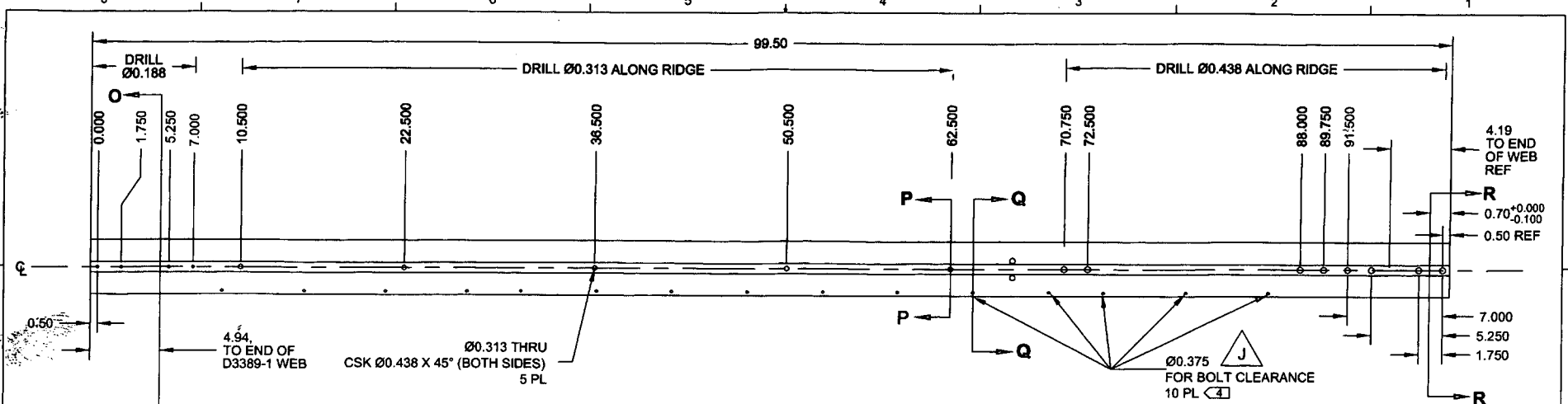
WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

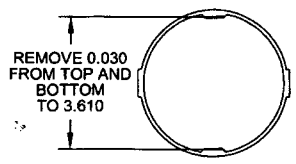
Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">Skid-tube ☐</td> <td style="width: 15%;">Cross tube ☐</td> <td style="width: 15%;">Water Jet ☐</td> <td style="width: 15%;">Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
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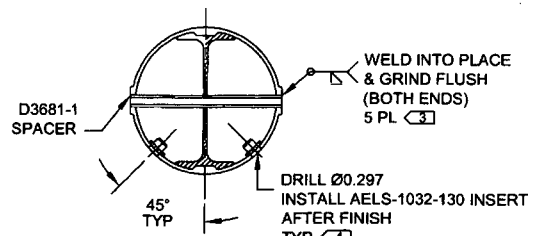


D3391-023 MID TUBE ASSEMBLY

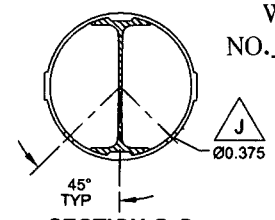
SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 109933
MLS
170120



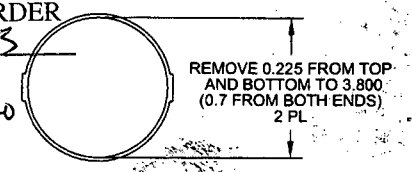
SECTION O-O
SCALE 2X



SECTION P-P
SCALE 2X



SECTION Q-Q
SCALE 2X



SECTION R-R
SCALE 2X

RELEASED
2016-04-28

D3391-023 MID TUBE ASSEMBLY PARTS LIST

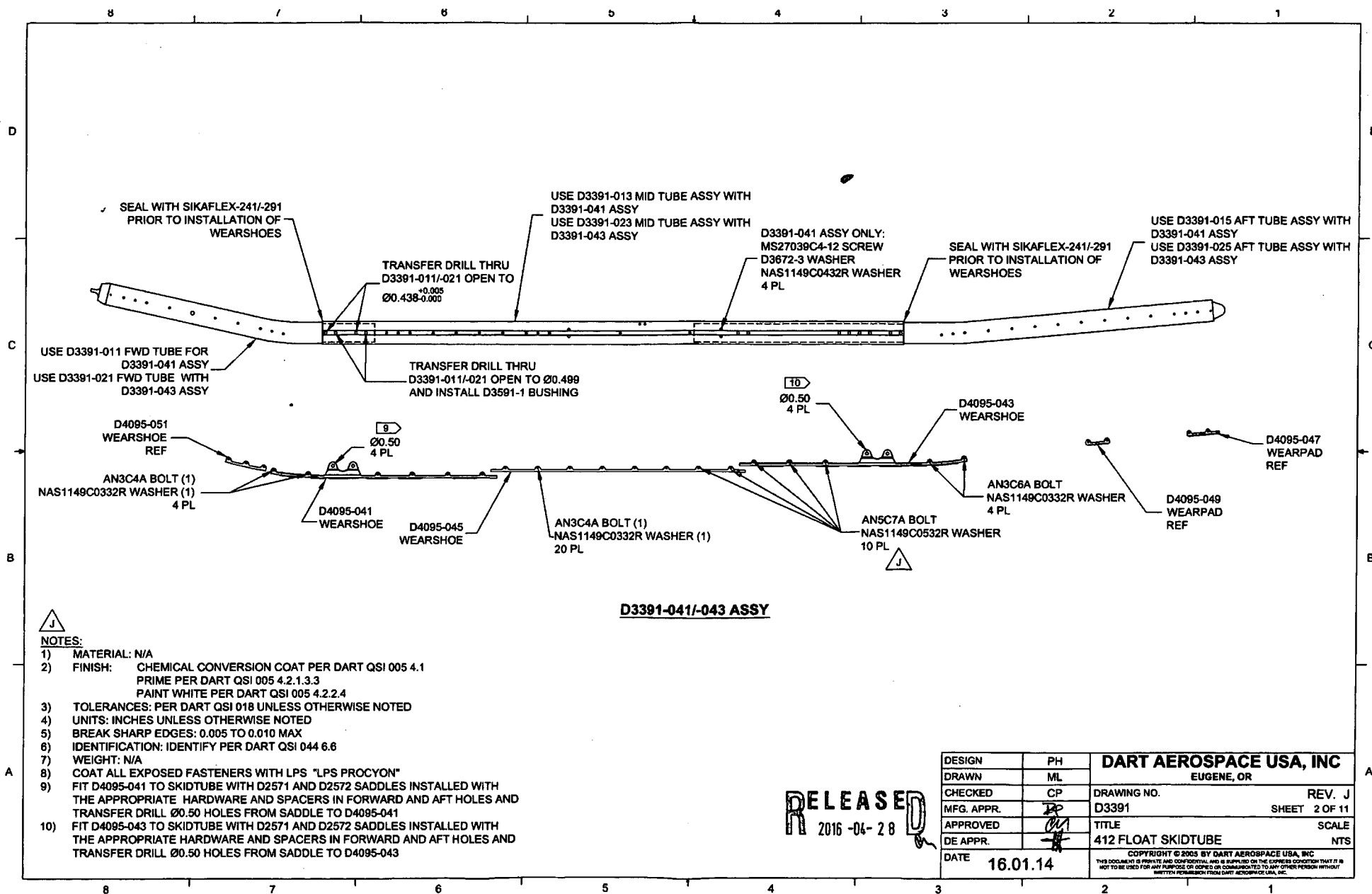
QTY	PART NUMBER	DESCRIPTION
X	D3391-023	MID TUBE ASSEMBLY
1	D2500-1-100	EXTRUSION
1	D3389-1	WEB
5	D3681-1	SPACER
20	AELS-1032-130	INSERT



D3391-023 MID TUBE ASSEMBLY

- 1) MATERIAL: MAKE FROM D2500-1-100
- 2) INSTALL D3389-1 WEB TO OUTER TUBE USING SIKAFLEX-241/-291 PER QSI 015
- 3) WELDING: PER DART QSI 004
- 4) USE DART DRILL TEMPLATE DT8217 TO LOCATE AND DRILL Ø0.297 AND Ø0.375 HOLES FOR WEARSHOE INSERTS AND NUTPLATES. CBORE AS NOTED AND INSTALL INSERT/NUTPLATES EXCEPT WHERE INDICATED.

DESIGN	PH	DART AEROSPACE USA, INC	
DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.	<i>[Signature]</i>	D3391	SHEET 7 OF 11
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	412 FLOAT SKIDTUBE	NTS
DATE	16.01.14	COPYRIGHT © 2005 BY DART AEROSPACE USA, INC THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	



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2016-04-28

DESIGN	PH	DART AEROSPACE USA, INC	
DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.	<i>[Signature]</i>	D3391	SHEET 2 OF 11
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	412 FLOAT SKIDTUBE	NTS
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Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO36744**

Purchase Order Date 6/19/2017

PO Print Date 6/19/2017

Page Number 1 of 2

Order From :

VC-ATE001

Ship To : DART AEROSPACE LTD

ATELIER DEBOSSSELAGE
358 PRINCIPALE
CALUMET, QC J0V 1B0
CA

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name
Vendor Phone 819 242 5633

Buyer Chantal Lavoie
Customer POID
Customer Tax # 10127-2607
Terms Net 30
Currency CAD
FOB Destination-Collect

Ship To Contact
Ship To Phone
Ship Via:
Ship Acct:

Line Nbr	Reference Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable Promise Date	CD	Req Qty/ Unit of Measure	PO Unit Price	Extended Price
1	159933	D3391-023 MID TUBE	6/29/2017 Yes 6/29/2017		1.00	\$0.00	\$0.00
Line Total:							\$0.00
2	159919	D3391-023 MID TUBE	6/29/2017 Yes 6/29/2017		1.00	\$0.00	\$0.00
Line Total:							\$0.00
3	162057	D3391-023 MID TUBE	6/29/2017 Yes 6/29/2017		1.00	\$0.00	\$0.00

CL JUN 20 2017

Note:

6/19/2017